DNR North Slope Facility Access Pilot Study

May 2004

Presentation to Alaska Senate Resources Committee

February 3, 2012

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Project Overview

- Study commissioned by Alaska Department of Natural Resources, Division of Oil and Gas in 2004
- “Facility sharing is critical for the future of the oil and gas industry on the North Slope”
- Delivery of final report in May, 2004

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Motivation

- Avoid regulation of facilities access
- Develop fair and equitable sharing process for North Slope Facilities
- Achieve mutual benefit for all parties

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Project Goals

- Characterize the existing facilities
- Tabulate their current throughput
- Quantify theoretical capacities
- Identify, quantify, and market excess capacity

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Project Goals (cont'd)

- Disseminate information to encourage hydrocarbon development on the North Slope.
- Identify needs and desires of:
  - Independent explorers and producers
  - North Slope facility owners/operators
- Describe how facility access is managed in other oil and gas provinces
- Develop guidelines for facility access on the North Slope

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Parties impacted by issues

- Major Oil Companies currently producing and operating on the North Slope.
- Potential third-party producers attempting to explore and develop on the North Slope.
- State of Alaska.

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Benefits

- Mitigate North Slope Oil decline by including Independents.
- Educate independents; remove myths and perceptions.
- Reduce unit operating and transportation costs.
- Extend economic field life for mature fields.
- Accelerate new field development.
- Maximize resource exploitation.
- Minimize waste/footprint.

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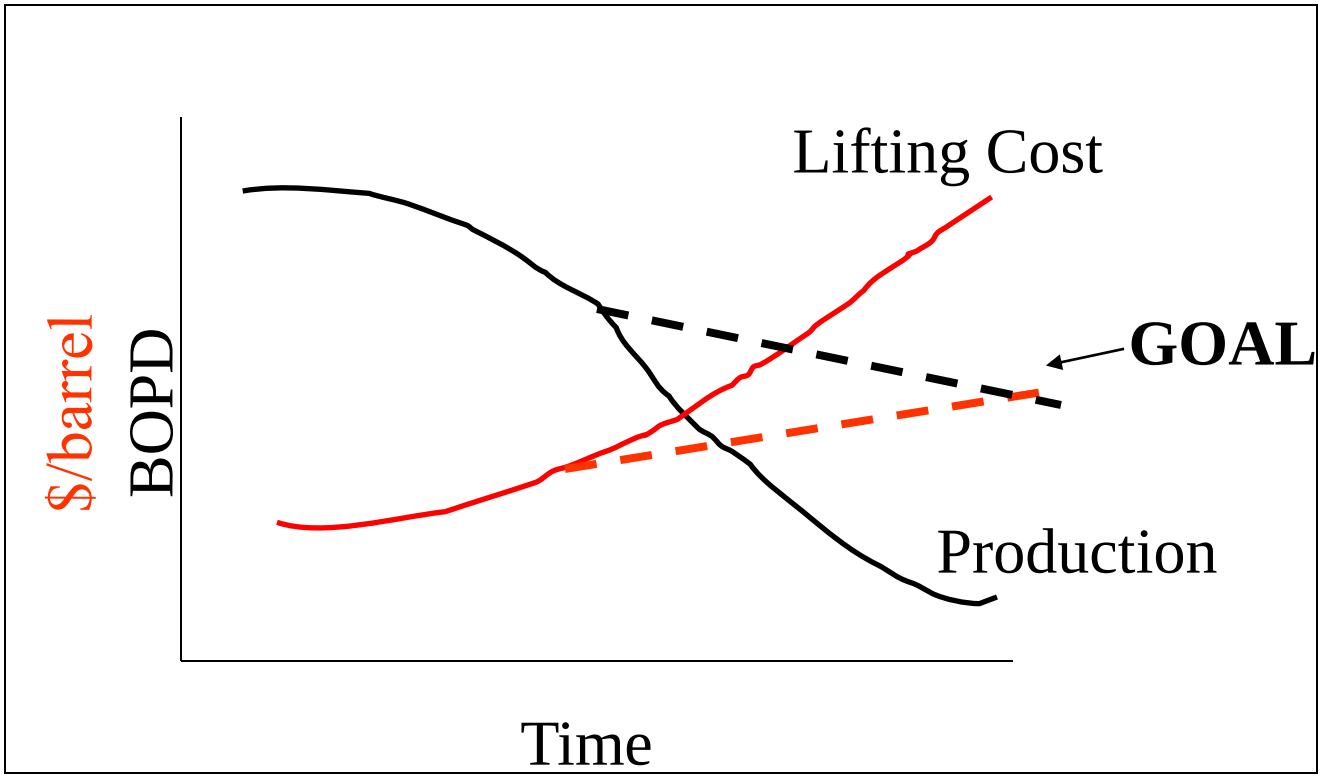
Benefit



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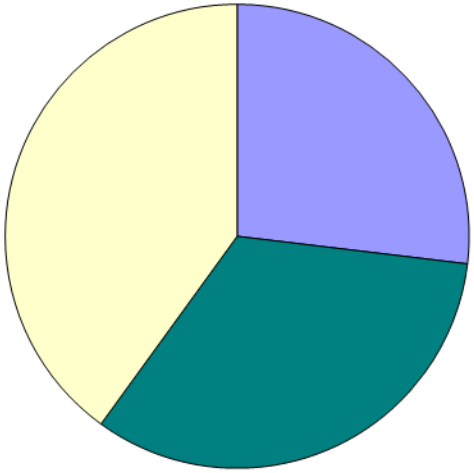
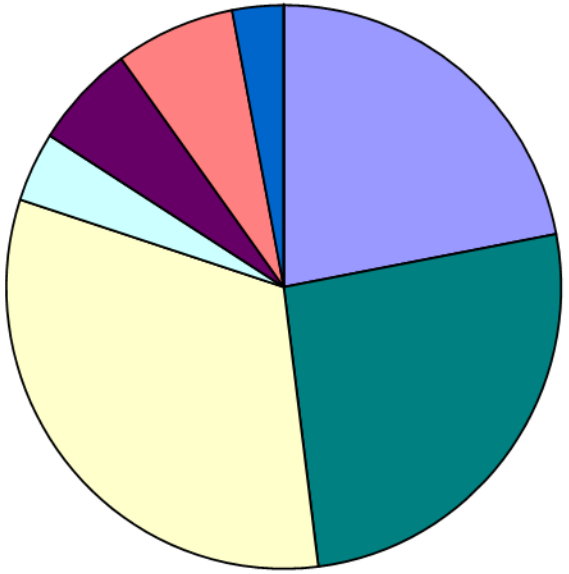
A bigger pie

Today's North Slope Production



Future Production



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Challenges

- Overcome unaligned interests.
- Address system dynamics.
- Maintain high standard of operational integrity.
- Reconcile conflicting asset valuations.

  Ad Valorem vs replacement

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Questions to the Operators

- What are the benefits to WIOs?
- What do you want potential third-party producers to know?
- Where is existing or future excess capacity?
- What is the process and cost of gaining access?

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Future Production?

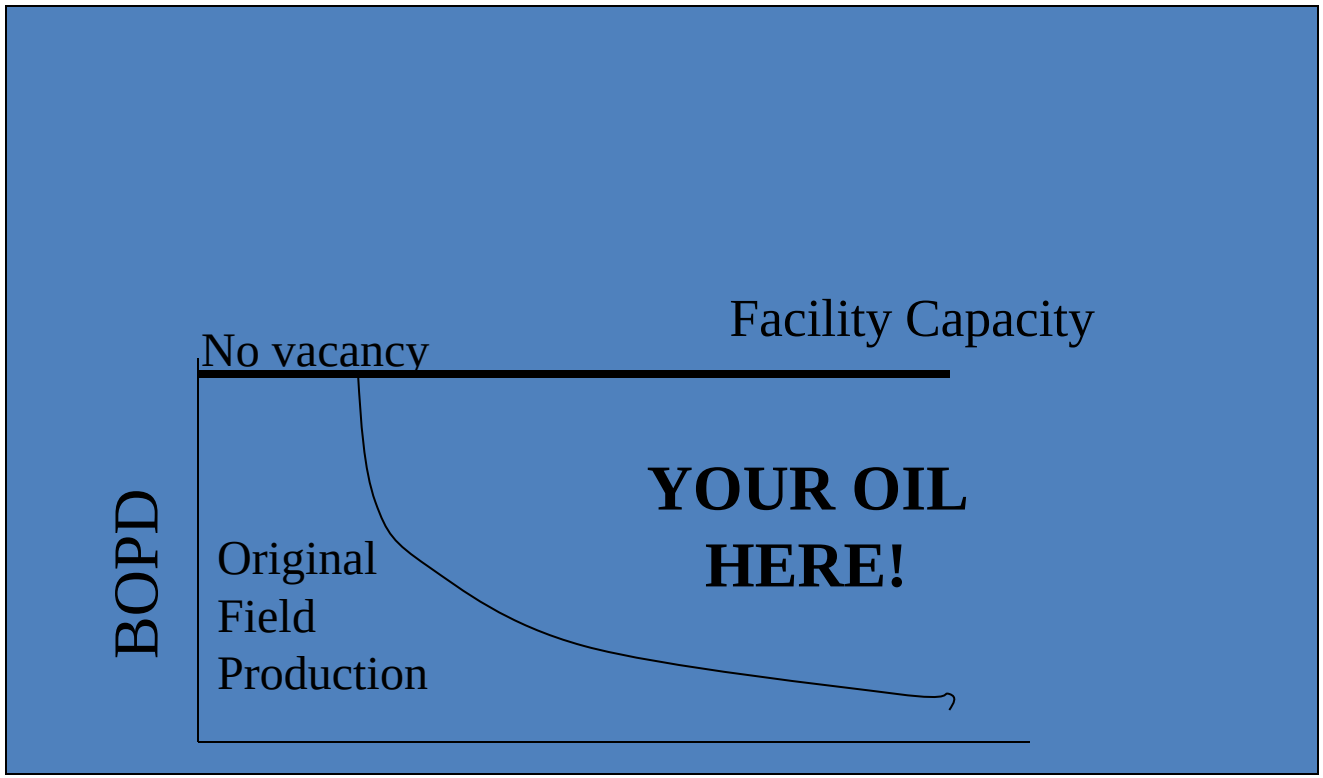

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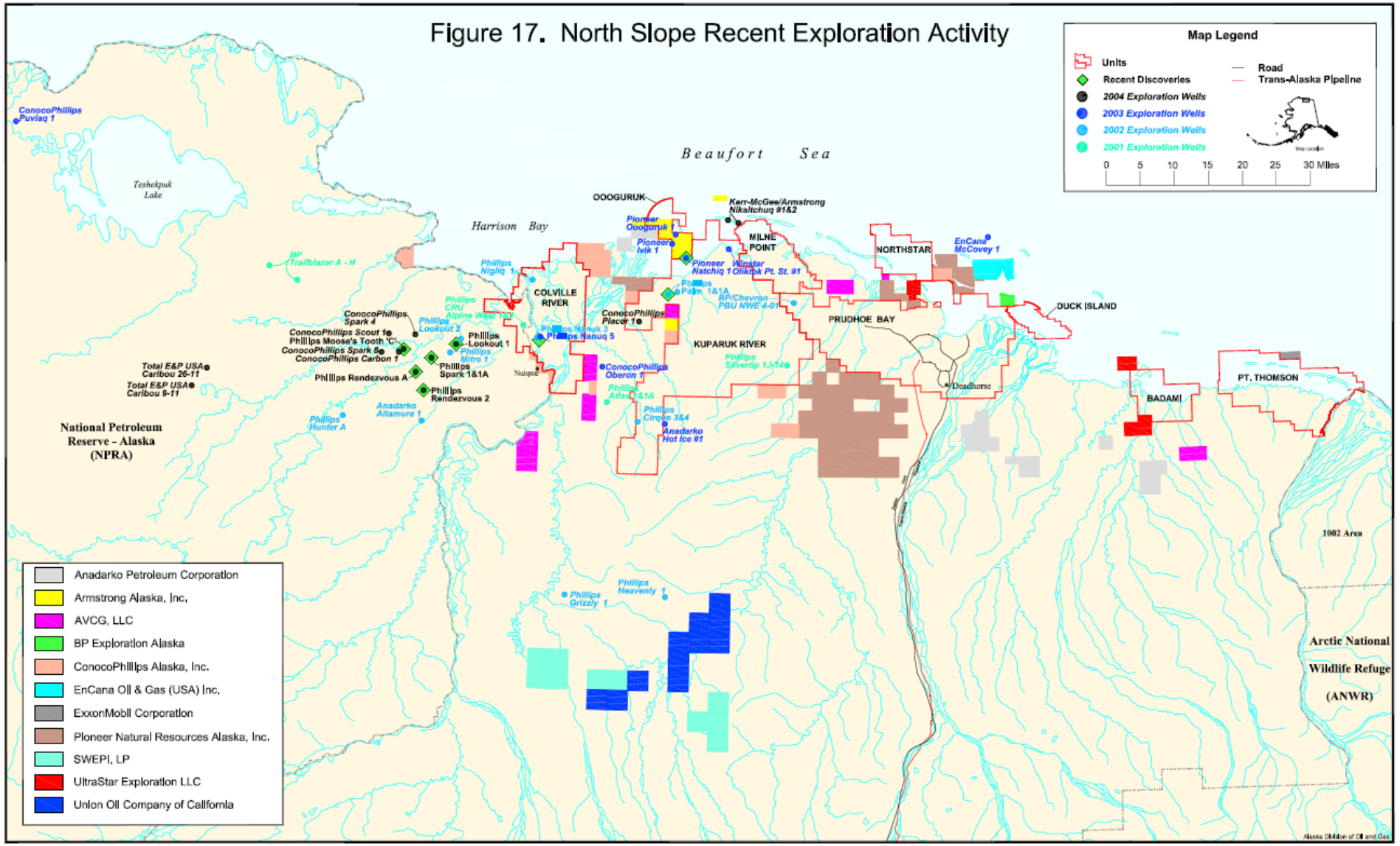
Figure 17. North Slope Recent Exploration Activity



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North Slope Units and Processing Facilities

Alaska Department of Natural Resources, Division of Oil & Gas
November 2003

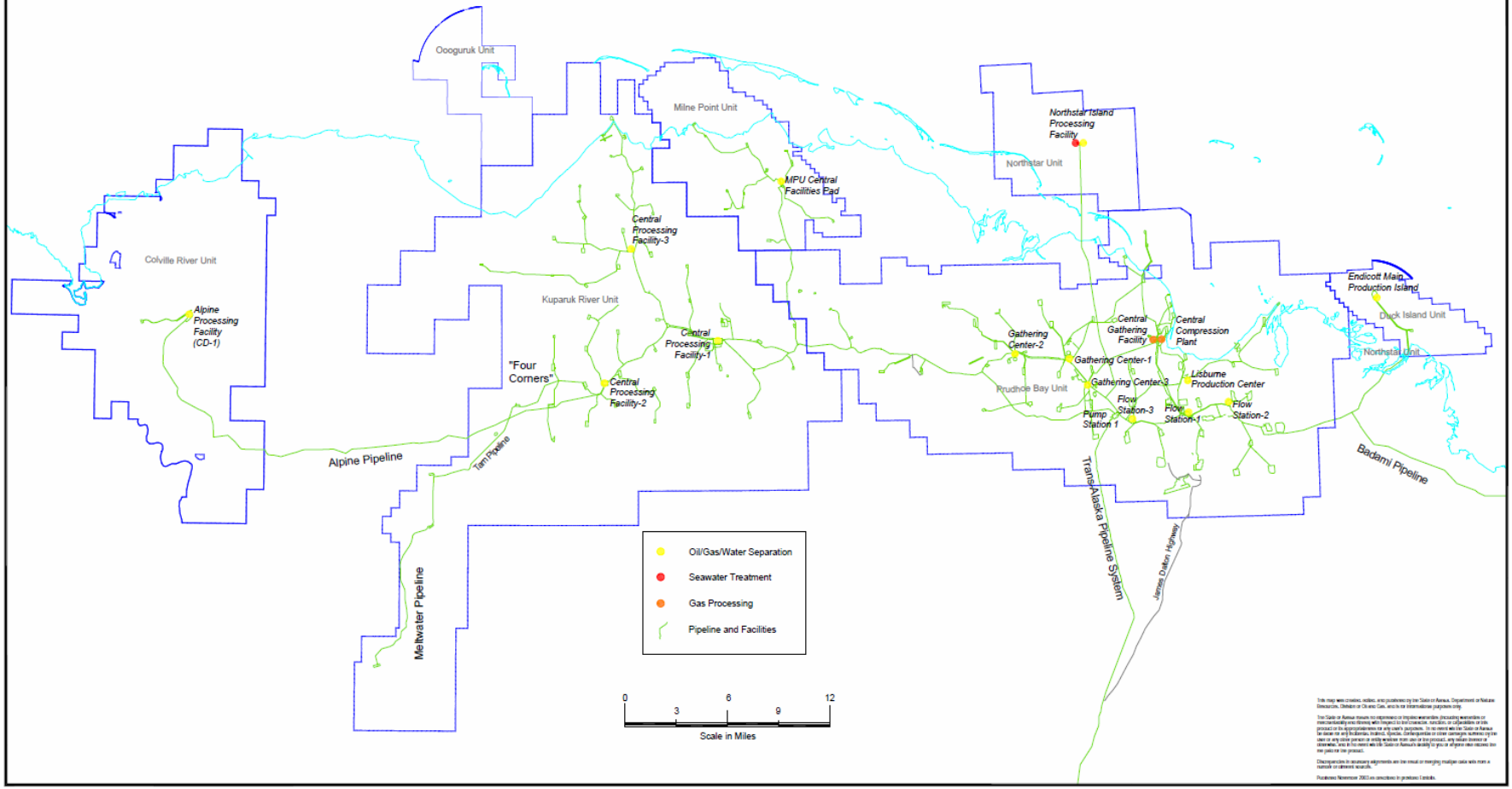

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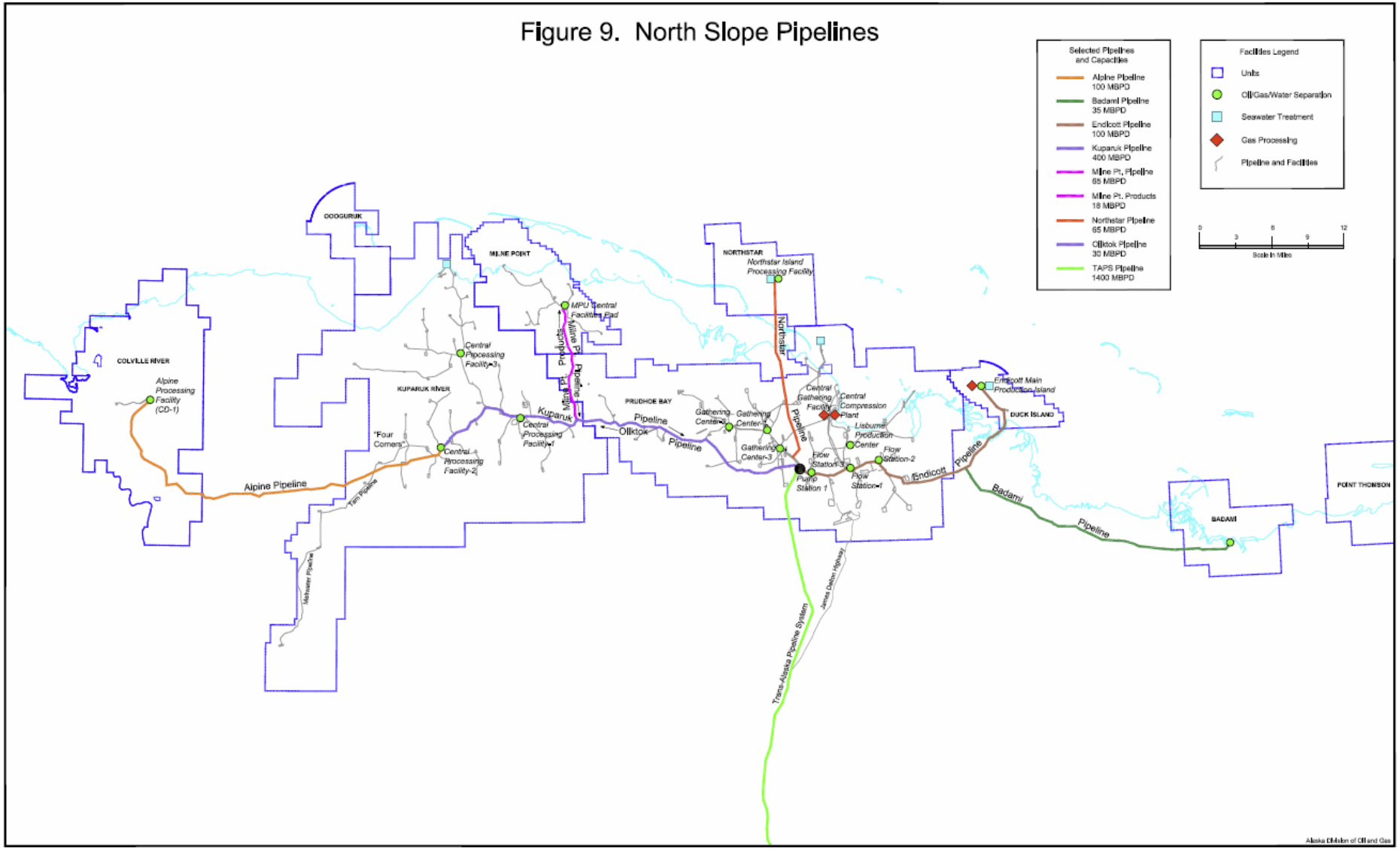
Figure 9. North Slope Pipelines



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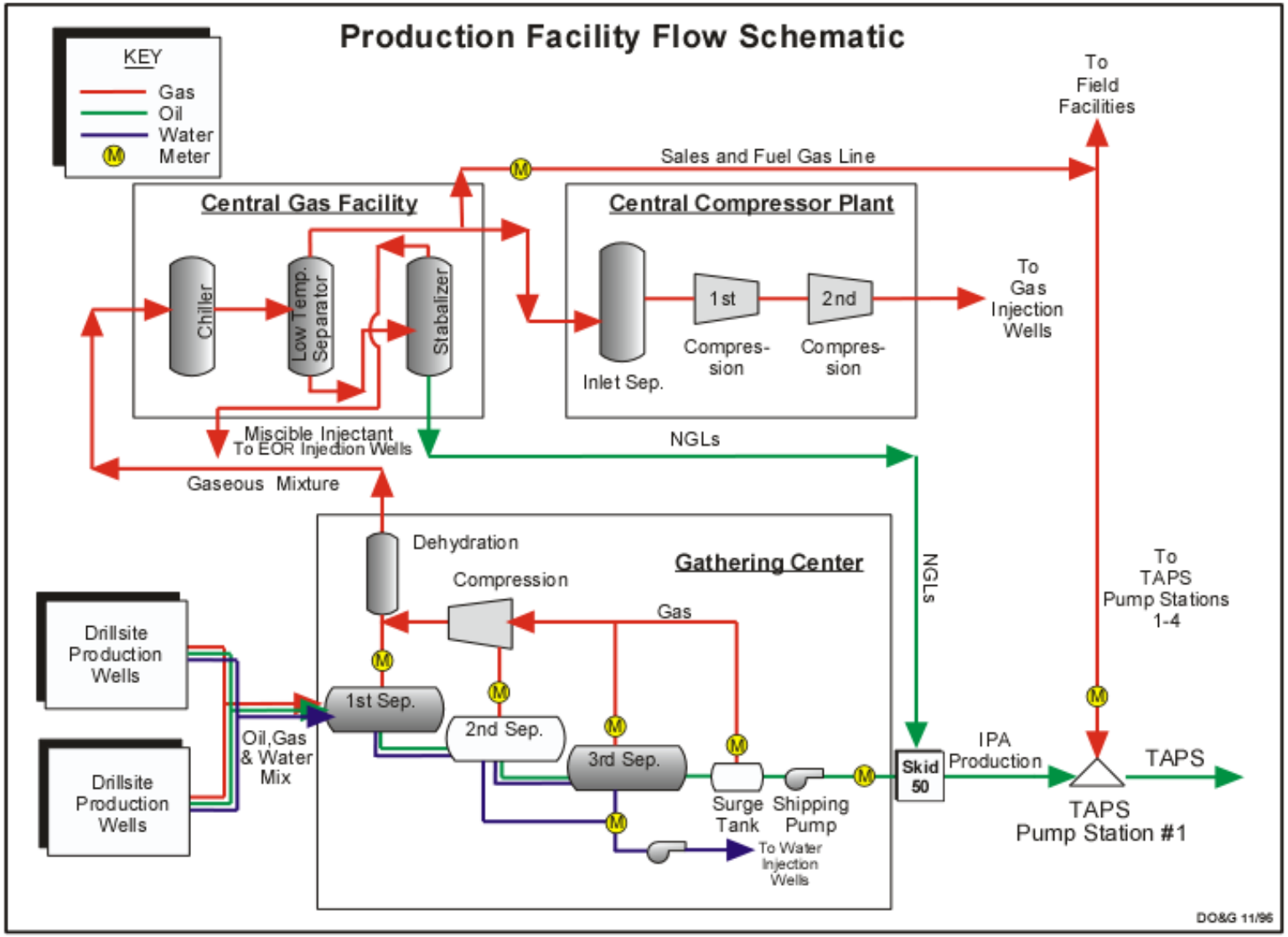

Individual process flow diagrams received from operators for: Alpine, Badami, Endicott, Kuparuk, Milne Pt., Northstar, Pt. McIntyre, Lisburne, and Prudhoe Bay

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Table 9 North Slope Pipeline Capacities and Projected Field Production

(a) Badami includes projected Liberty throughput
(b) Endicott includes Badami and Liberty throughput
(c) Kuparuk includes Alpine and Milne Pt. throughput

MBPD Year	Badami Pipeline	Endicott Pipeline	Milne Pt. Pipeline	Alpine Pipeline	Kuparuk Pipeline	NorthStar Pipeline	TAPS Pipeline
Current Capacity '04	**35**	**100**	**65**	**100**	**400**	**65**	**1400**
2003	0	29	51	98	361	62	994
2004	0	30	52	99	359	68	997
2005	0	29	53	98	364	60	982
2006	0	27	57	103	376	50	968
2007	0	25	58	117	390	40	954
2008	0	24	59	117	379	32	923
2009	0	22	59	104	367	27	878
2010	35	56	59	86	338	20	852
2011	50	70	58	71	322	17	824
2012	48	66	57	60	300	15	775
2013	38	55	56	51	290	12	734
2014	31	47	56	44	273	10	691
2015	27	42	55	38	267	9	663

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TAPS Specs

The pipeline specifications for the oil delivery to PS1 are as follows:

- Maximum basic sediment and water (BS&W) content of 0.35%
- Minimum delivery temperature of 105^{o} F to prevent paraffin deposition
- Maximum delivery temperature of 142^{o} F
- Maximum True Vapor Pressure of 14.2 psia

TAPS is a common carrier pipeline, and does not discriminate against shippers, but will prorate if capacity exceeded.

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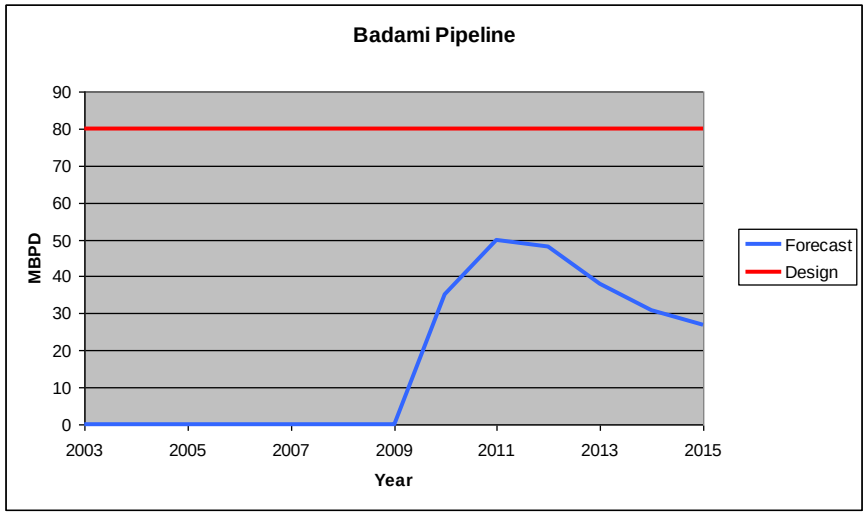
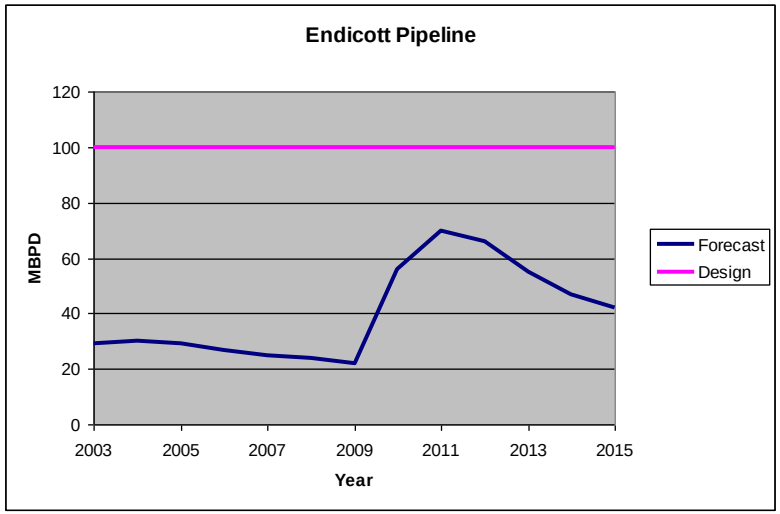
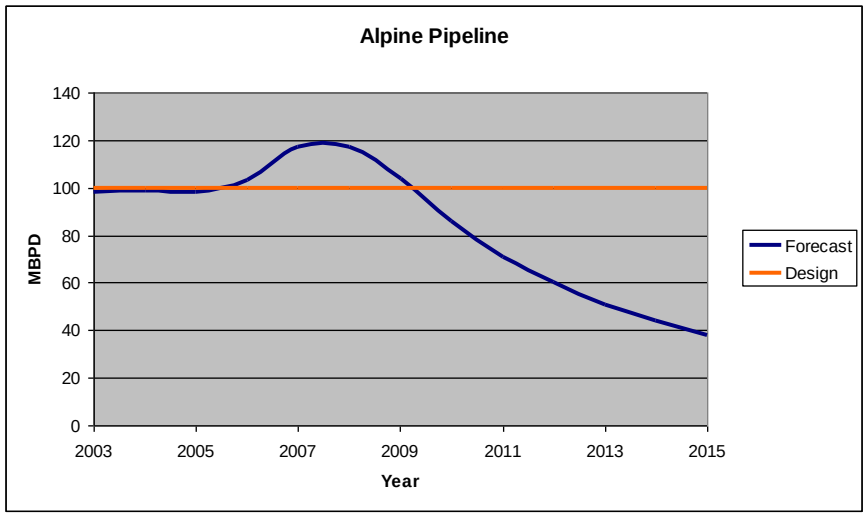
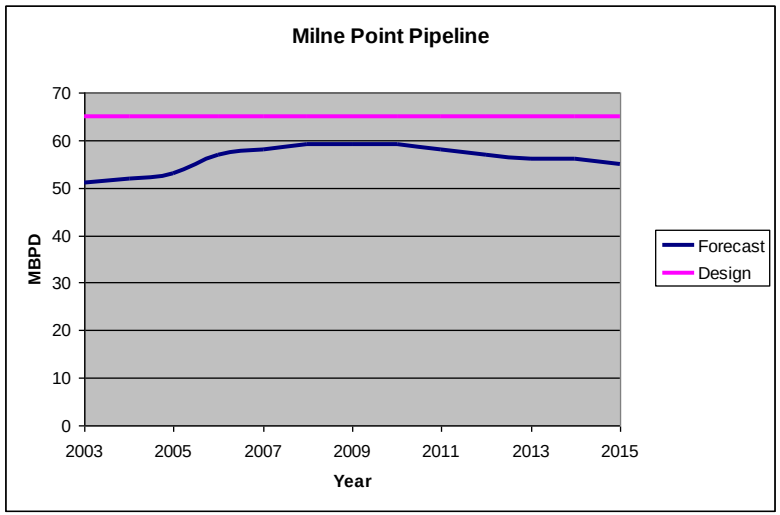
Pipeline Capacities and Forecasts









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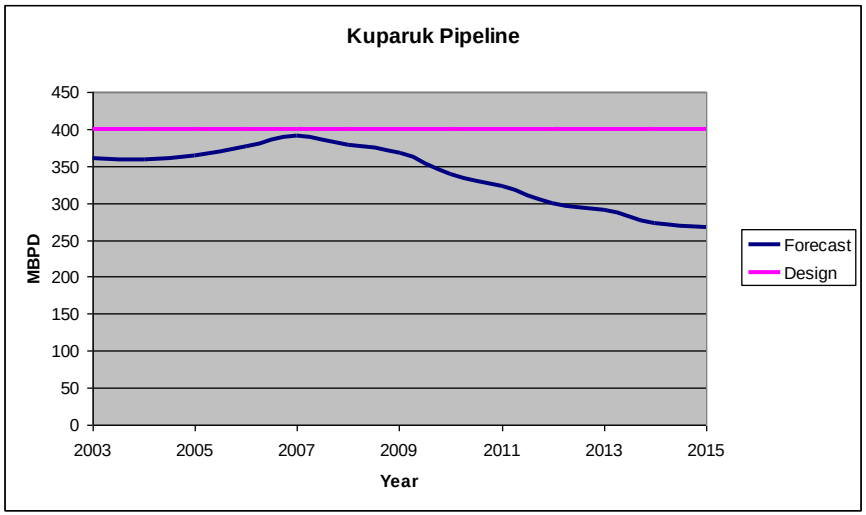
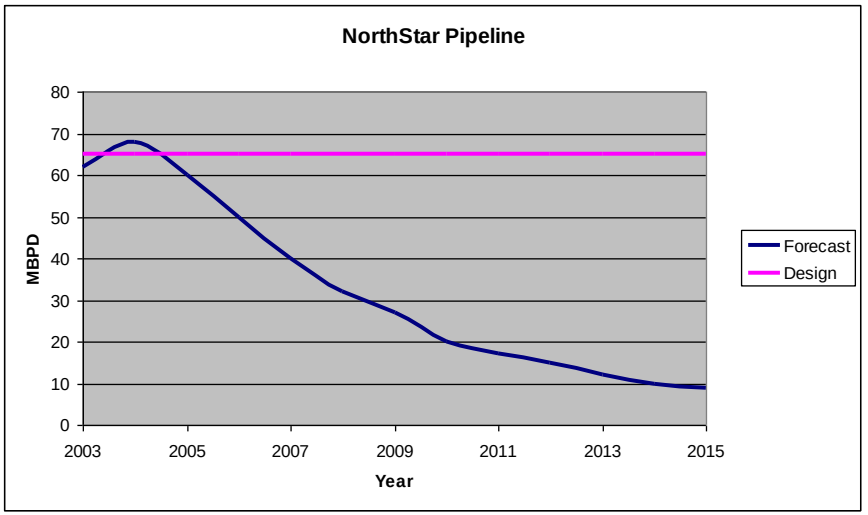
Pipeline Capacities and Forecasts





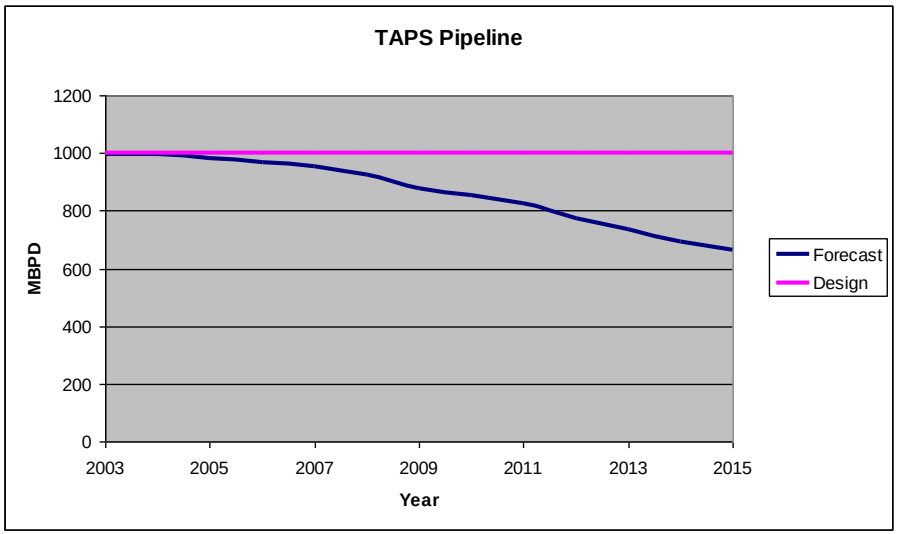


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Table 10 **Facility and Pipeline Capacity/Constraint Summary**

•Feeds into Kuparuk Pipeline and dependent upon space there.

Facility	Capacity Available for:	Constrained Stream	Backout	Pipeline
Alpine	none	oil, gas, water	likely	Full
Badami	oil, gas, water	none	not likely	Not Full
Endicott	oil	gas, water	likely	Not Full
Kuparuk	oil	gas, water	likely	Near Full
Milne Point	oil, gas, water	water 2011	maybe	*
Northstar	oil, gas, water	gas 2006	maybe	Near Full
Pt. Mac/Lis	oil, water,	gas	likely	Near Full
	oil	gas, water	Certain	Not Full

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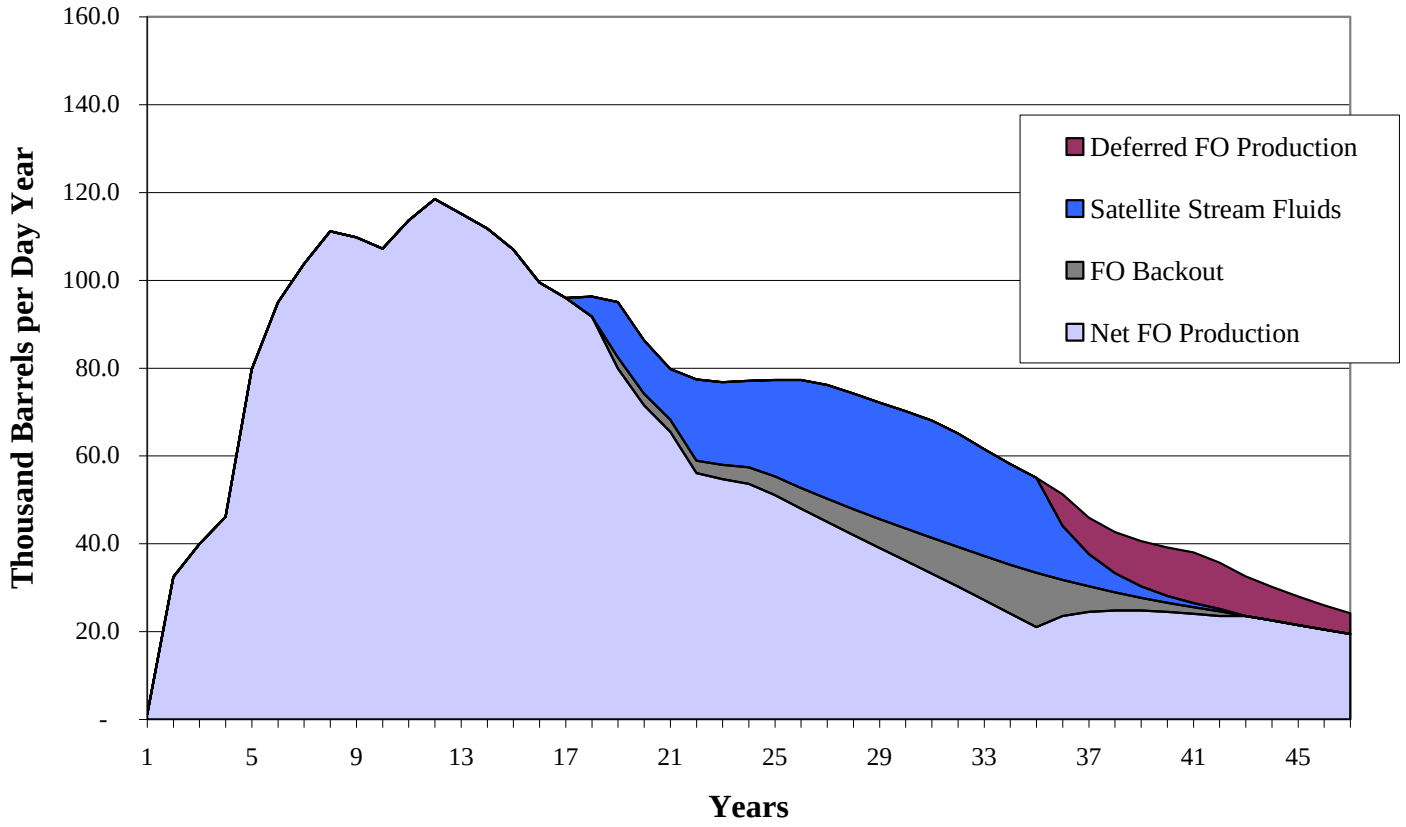
Hypothetical Backout Profile



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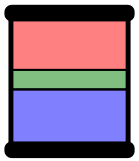
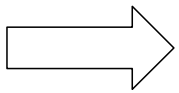
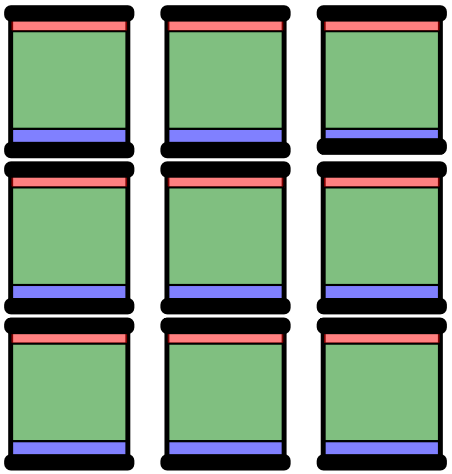
Backout Concept



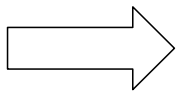
Water / Gas constrained facility



One Barrel current production
high gas/ water cut oil



Water / Gas constrained facility



Nine Barrels potential satellite production
low gas/ water cut oil

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Summary

•Facility Owners and Independents are generally supportive of facility sharing

•Value of facility sharing is dependent on proximity of production to processing,
characteristics of oil to be processed, specific constraints of target facility, etc.

•Means and motivation exist to implement facility sharing agreements, and at least two examples available

•Not all cases will fit

•No oil currently being “held-up” due to facility sharing issues

•More transparency and more discoveries would be helpful

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Acknowledgments

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- Bill Van Dyke

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